

# AUDIO RECORDER **AR-200S**

## Owner's Manual

Thank you, and congratulations on your choice of the AR-200S Roland Audio Recorder. This manual mainly describes how to use the AR-200S as a playback device using CompactFlash cards that contain recordings made with other AR Series models.

\* When recording to CompactFlash cards with the AR-3000/2000/200/100, we recommend use of optional Roland CompactFlash cards (PM-\*\*\*-CF Series).

**Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (p. 2; p. 3). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.**

### Main Features

#### **Simplified Panel, Specialized for Remote Control from Other Devices**

The AR-200S can be used as a dedicated playback device, which is controlled by means of instructions from other devices, and which employs phrases created with the AR-3000/200 and saved on CompactFlash cards.

#### **High-Quality Recording and Playback**

Roland's innovative RDAC system enables high-quality recording and playback using less data. You can select recording settings tailored to the usage circumstances and the capacity of the card, with six different sampling frequencies and four levels of signal processing (RDAC-Mode). This ensures compatibility for recording and playback for a variety of situations and applications.

All recorded phrases are saved on memory cards, allowing you to quickly play phrases for any situation, simply by changing cards.

\* *Maximum recording time with use of 128 MB CompactFlash cards (with monaural recording)*  
HIGH (44.1 kHz)/16-bit Linear: 24 minutes (approximately 11 seconds/MB)  
LONG1 (22.05 kHz)/RDAC-MODE 3: 2 hours 11 minutes (approximately 1 minute/MB)  
ANNOUNCE (8 kHz)/RDAC-MODE 1: 9 hours (approximately 4 minutes 10 seconds/MB)

#### **Audio Recording System Uses No Moving Parts**

The AR-200S uses memory cards in an audio recording system that has no moving parts. The system uses no rotating parts or drive mechanism, so it's practically maintenance free. It also features excellent sound quality and superior reliability.

#### **A Variety of Control Terminals for a Wide Range of Playback Methods**

The AR-200S features "Control Input Terminals" as control connectors. This permits connection of switches, sensors, program timers, and other devices, enabling control of the unit from another location. In addition, the AR-200S can be controlled with a computer via the RS-232C port.

#### **Compact Half-Rack Size Body**

The 1U half-rack size body takes up practically no space. The AR-200S can be mounted in any standard 19-inch EIA rack using the optional rack mount adapter.

#### **Allows DC-Powered Operation**

The AR-200S features input terminals for DC power supplies, making the unit compatible in a variety of usage environments.

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# USING THE UNIT SAFELY

## INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

### About ⚠ WARNING and ⚠ CAUTION Notices

|                  |  |
|------------------|--|
| <b>⚠ WARNING</b> | Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.   |
| <b>⚠ CAUTION</b> | Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly.<br>* Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets. |

### About the Symbols

|  |  |
|--|--|
|  | The ⚠ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.         |
|  | The ⚡ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled. |
|  | The ⏻ symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.        |

### ALWAYS OBSERVE THE FOLLOWING

#### ⚠ WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.
- Do not open (or modify in any way) the unit or its AC adaptor.
- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Never use or store the unit in places that are:
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.
- This unit should be used only with a rack mount adaptor (RAD-50) that is recommended by Roland.
- When using the unit with a rack mount adaptor recommended by Roland, the rack must be carefully placed so it is level and sure to remain stable. If not using a rack or stand, you still need to make sure that any location you choose for placing the unit provides a level surface that will properly support the unit, and keep it from wobbling.
- Be sure to use only the AC adaptor supplied with the unit. Also, make sure the line voltage at the installation matches the input voltage specified on the AC adaptor's body. Other AC adaptors may use a different polarity, or be designed for a different voltage, so their use could result in damage, malfunction, or electric shock.
- Take care not to exceed the maximum rated specifications (100 mA) when using the DC OUT terminal for the power supply.

#### ⚠ WARNING

- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!
- This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.
- Immediately turn the power off, remove the AC adaptor from the outlet, and request servicing by your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page when:
  - The AC adaptor or the power-supply cord has been damaged; or
  - If smoke or unusual odor occurs
  - Objects have fallen into, or liquid has been spilled onto the unit; or
  - The unit has been exposed to rain (or otherwise has become wet); or
  - The unit does not appear to operate normally or exhibits a marked change in performance.
- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.
- Protect the unit from strong impact. (Do not drop it!)
- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/ amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.

#### ⚠ WARNING

- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

#### ⚠ CAUTION

- The unit and the AC adaptor should be located so their location or position does not interfere with their proper ventilation.
- Always grasp only the output plug or the body of the AC adaptor when plugging into, or unplugging from, this unit or an outlet.
- At regular intervals, you should unplug the AC adaptor and clean it by using a dry cloth to wipe all dust and other accumulations away from its prongs. Also, disconnect the power plug from the power outlet whenever the unit is to remain unused for an extended period of time. Any accumulation of dust between the power plug and the power outlet can result in poor insulation and lead to fire.
- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children.
- Never climb on top of, nor place heavy objects on the unit.
- Never handle the AC adaptor body, or its output plugs, with wet hands when plugging into, or unplugging from, an outlet or this unit.
- Before moving the unit, disconnect the AC adaptor and all cords coming from external devices.
- Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet.
- Whenever you suspect the possibility of lightning in your area, disconnect the AC adaptor from the outlet.
- Keep any removed screw terminals, the ground terminal screw, screw terminal cover, included Euroblock connector, rubber feet, and card protector attachment screws safely out of children's reach so as to prevent these pieces from being swallowed accidentally by young children.

# IMPORTANT NOTES

In addition to the items listed under “USING THE UNIT SAFELY” on page 2, please read and observe the following:

## Power Supply

- Do not connect this unit to same electrical outlet that is being used by an electrical appliance that is controlled by an inverter (such as a refrigerator, washing machine, microwave oven, or air conditioner), or that contains a motor. Depending on the way in which the electrical appliance is used, power supply noise may cause this unit to malfunction or may produce audible noise. If it is not practical to use a separate electrical outlet, connect a power supply noise filter between this unit and the electrical outlet.
- The AC adaptor will begin to generate heat after long hours of consecutive use. This is normal, and is not a cause for concern.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

## Placement

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.

## Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzine, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

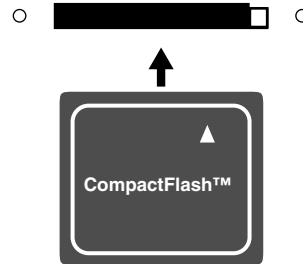
## Additional Precautions

- Keep the included Euroblock connector in a safe place out of children’s reach, so there is no chance of them being stepped on accidentally.
- Unfortunately, it may be impossible to restore the contents of data that was stored on a memory card once it has been lost. Roland Corporation assumes no liability concerning such loss of data.
- Use a reasonable amount of care when using the unit’s buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable’s internal elements.
- To avoid disturbing your neighbors, try to keep the unit’s volume at reasonable levels (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.

## Before Using Cards

### Using Memory Cards

- Carefully insert the memory card all the way in—until it is firmly in place.



- Never touch the terminals of the memory card. Also, avoid getting the terminals dirty.
- This unit’s memory card slot accepts CompactFlash memory cards. Microdrive storage media are not compatible.
- CompactFlash cards are constructed using precision components; handle the cards carefully, paying particular note to the following.
  - To prevent damage to the cards from static electricity, be sure to discharge any static electricity from your own body before handling the cards.
  - Do not touch or allow metal to come into contact with the contact portion of the cards.
  - Do not bend, drop, or subject cards to strong shock or vibration.
  - Do not keep cards in direct sunlight, in closed vehicles, or other such locations (storage temperature: -25 to 85° C).
  - Do not allow cards to become wet.
  - Do not disassemble or modify the cards.

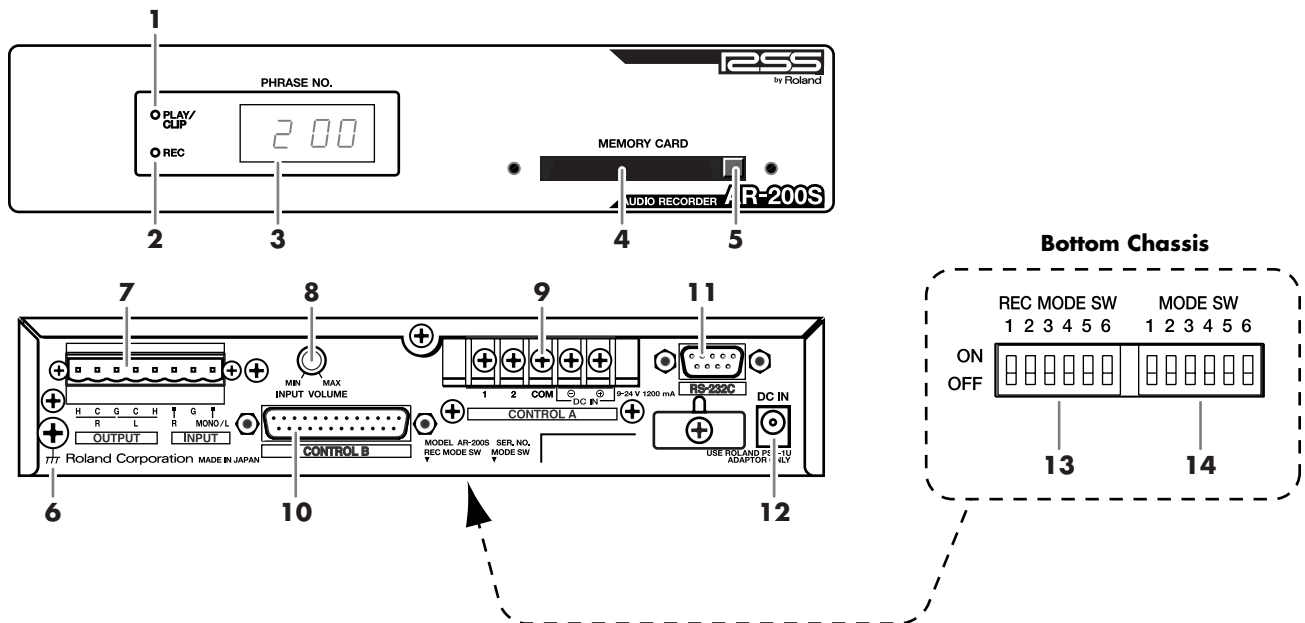
## Copyright

- Unauthorized recording, distribution, sale, lending, public performance, broadcasting, or the like, in whole or in part, of a work (musical composition, video, broadcast, public performance, or the like) whose copyright is held by a third party is prohibited by law.
- Do not use this unit for purposes that could infringe on a copyright held by a third party. We assume no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.

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# Panel Descriptions



## Front Panel

- 1. PLAY/CLIP Indicator**  
Lights during playback of phrases.  
Also lights during recording of phrases when the input level is too high (at clipping level).
- 2. REC Indicator**  
Lights during recording of phrases.
- 3. Display**  
Phrase numbers are indicated here.
- 4. MEMORY CARD Slot**  
Slot for inserting CompactFlash cards.
- 5. Eject Button**  
Press to eject the CompactFlash card.

## Rear Panel

- 6. Ground Terminal**  
Depending on the circumstances of a particular setup, you may experience a discomforting sensation, or perceive that the surface feels gritty to the touch when you touch this device, microphones connected to it, or the metal portions of other objects, such as guitars. This is due to an infinitesimal electrical charge, which is absolutely harmless. However, if you are concerned about this, connect the ground terminal (see figure) with an external ground. When the unit is grounded, a slight hum may occur, depending on the particulars of your installation. If you are unsure of the connection method, contact the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.
- Unsuitable places for connection**
  - Water pipes (may result in shock or electrocution)
  - Gas pipes (may result in fire or explosion)
  - Telephone-line ground or lightning rod (may be dangerous in the event of lightning)
- 7. Audio I/O Terminals**  
Terminals for input and output of analog audio.
- 8. INPUT VOLUME Knob**  
Adjusts the volume level of signals input to the audio input terminals.
- 9. Control/Power Input Terminals (CONTROL A)**  
Terminals for external control signals used to control the AR-200S and for connecting to an external DC power supply (p. 10, p. 11).

\* The terminal block features a protective cover. Be sure not to lose the cover when making connections to the terminals or other times when the cover is removed. Also be sure to keep the removed cover out of the reach of children.

- 10. Control I/O Terminals (CONTROL B)**  
Terminals for external control signals used to control the AR-200S and for connecting to an external DC power supply (p. 10, p. 11, p. 12, p. 13, p. 15, p. 23).
  - 11. RS-232C Connector**  
Allows for communicating with computers or other equipment (p. 9, p. 17).
  - 12. AC Adaptor Jack**  
Accepts connection of the supplied AC adaptor.  
\* Be sure to use only the PSB-1U AC adaptor.
- ## Bottom Chassis
- 13. REC MODE Switches**  
Used for recording settings (p. 14).
  - 14. MODE Switches**  
Used for switching the playback mode and output level (p. 22).

## Display Examples

| AR-200S Status          | Display |   |
|-------------------------|---------|---|
| Stopped                 |         | The phrase number of the currently selected phrase is indicated.                                |
|                         |         | When a phrase without any data recorded to it is selected, the phrase number flashes.           |
| During Phrase Playback  |         | The phrase number of the phrase currently playing is indicated, and the four dots light.        |
|                         |         | During playback of a MIDI phrase, the phrase number flashes and the four dots light.            |
| During Phrase Recording |         | The phrase number of the phrase currently being recorded is indicated, and the four dots flash. |

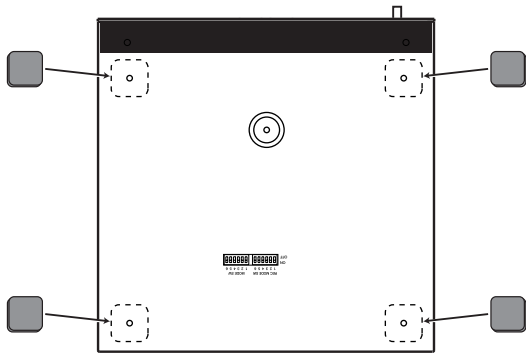
\* Depending on the playback mode (p. 10), a phrase with a different number than the one displayed may be played back.

# Installation

## Attaching the Rubber Feet (Included Items)

Attach these as required, such as when you're using the AR-200S without mounting it on a rack or the like.

Peel off the double-sided tape from the rubber feet and affix the rubber feet at the locations shown in the following figure.



## Rack Mounting (Important Notes on Heat Radiation)

When you are mounting the unit on a rack or the like, give attention to the following points to ensure efficient cooling.

- Install in a well-ventilated location.
- Avoid mounting in a sealed rack. Warm air within the rack cannot escape and is sucked into the unit again, making efficient cooling impossible.
- When you are using a stacked mounting arrangement, be especially sure to provide for adequate ventilation within the rack to keep discharged air from being sucked back into the unit. If the back surface of the rack cannot be kept open, then provide a ventilation port or ventilation fan at the upper area of the back surface of the rack, where warm air accumulates.
- When you are using the unit in a portable case or rack, remove the covers from the front and back surfaces of the case, so that the front and back surfaces of the unit are not obstructed.

\* When placing the unit on the rack, be careful not to pinch your fingers.

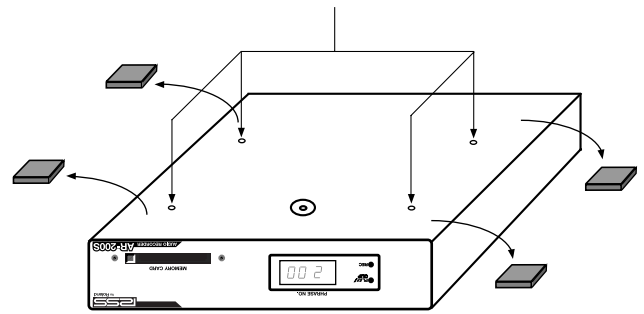
\* For more information about installation, also see "Placement" in the Important Notes (p. 3).

## Rack-Mounting the AR-200S

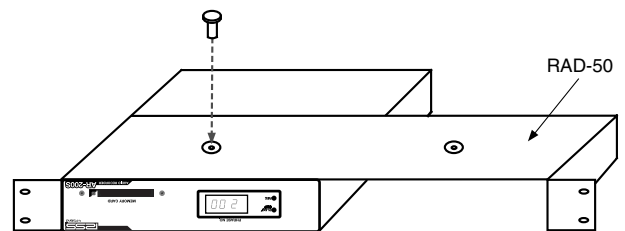
By attaching a rack mount adaptor (RAD-50: sold separately) to the AR-200S, you can install it in an EIA rack. One RAD-50 can accommodate up to two AR-200S units.

1. Remove the four rubber feet from bottom of the unit.

Note: Do not use these holes.



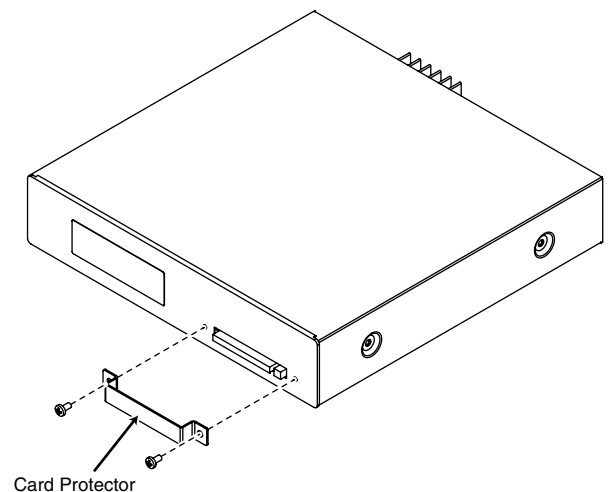
2. Attach the RAD-50 adaptor to the AR-200S using the screws that are supplied with the RAD-50.



## Attaching the Card Protector

By attaching the Card Protector (supplied) to the AR-200S, you can prevent the memory card from inadvertently being removed from the AR-200S.

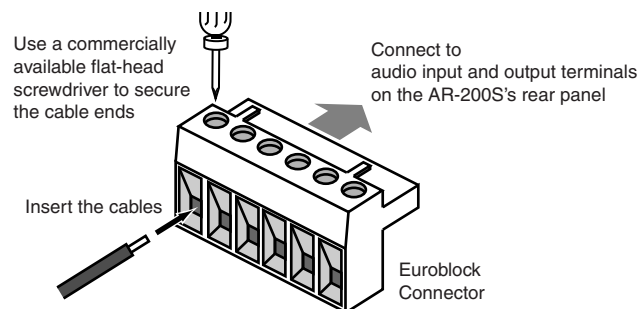
1. After confirming that the card is securely inserted in the card slot, use the provided screws to attach the Card Protector, as shown in the figure below.



# Important Notes on Making Connections and Switching the Power On and Off

- To prevent malfunction and/or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.
- To prevent the inadvertent disruption of power to your unit (should the plug be pulled out accidentally), and to avoid applying undue stress to the AC adaptor jack, anchor the power cord using the cord hook, as shown in the illustration.
- When connection cables with resistors are used, the volume level of equipment connected to the inputs (control/power input and control I/O terminals) may be low. If this happens, use connection cables that do not contain resistors.
- Once the connections have been completed, turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices. (When turning the power off, reverse this procedure.)  
Connected device → AR-200 → Power amp, etc.
- This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.
- To avoid risk of electric shock, do not touch the connectors while the unit is in operation.
- Never remove a card during recording of phrases. Furthermore, do not turn off the power or remove the AC adaptor cord during recording of phrases. Doing so may damage the card.
- To avoid the risk of malfunction and/or damage, insert only CompactFlash card into the MEMORY CARD slot. Never insert any other type of card. Avoid getting paper clips, coins, or any other foreign objects inside the drive.
- Do not remove the CompactFlash card while the card is being accessed. Doing so may corrupt the unit's data or the data on the CompactFlash card.
- Carefully insert the CompactFlash card all the way in—until it is firmly in place.

## Connecting Cables to the Audio Input and Output Terminals



## Turning On the Power

The AR-200S is not equipped with a power switch. Power is turned on when electricity is supplied to the AC adaptor jack, or to the control/power input, or control I/O terminals' DC IN.

Supplied AC adaptor: ACI or PSB series

## Control/Power Input and Control I/O terminals' DC IN specifications

Voltage: 9 to 24 V DC

Current: 1200 mA

\* Refer also to **DC Power Supply** (p. 23).

### NOTE

Do not supply electrical power simultaneously to multiple terminals; doing so may result in damage to the unit.

# Cards Handled by the AR-200S

With the AR-200S, recorded audio and non-audio information (phrase data) is stored on cards.

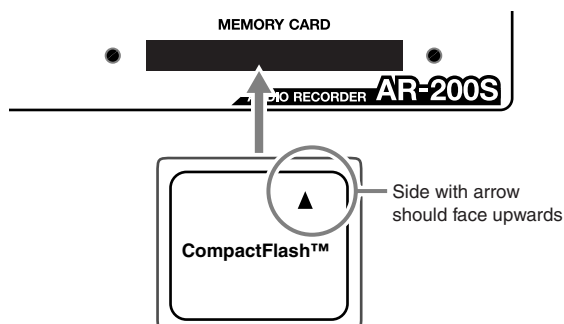
**Optional Roland CompactFlash cards (PM-\*\*\*-CF Series) are recommended for use with the AR-200S.**

Up to a maximum of 1000 phrases can be saved to cards formatted with the AR-200S.

\* To format a card on the AR-200S, transmit the format command via the RS-232C port.

## Important Notes on Handling Cards

- When Inserting**  
Insert the card all the way into the card slot.
- \* Insert the card straight into the slot, with the card label facing upwards.



- When Removing**

To remove the card, press the eject button.  
Press the eject button firmly, all the way in.

\* Never remove a card during recording, playback, or formatting. Furthermore, do not turn off the power or remove the AC adaptor cord during recording, playback, or formatting. Doing so may damage the card.

## Card Compatibility with Other Models in the AR Series

The AR-200S's file format is the same as the format for the AR-3000/200.

## Using Cards Formatted on Earlier Model Units with the AR-200S

- Files on PC cards used on AR-3000/200/2000/100 models can be used by copying the data to CompactFlash with the ARE-3000. (Cards copied using AR models cannot be used.)

## Using Cards Formatted on the AR-200S with Earlier Models

- Cards can be used as is with the AR-3000/200 by copying the data to PC card (PM series) with the ARE-3000.
- Cards cannot be used with the AR-2000/100. (Cards copied using other AR models cannot be used.)

Please download the ARE-3000 (free of charge) from the following URL.  
<http://www.rssamerica.com/>

# Examples of Usage and Connection for the AR-200S

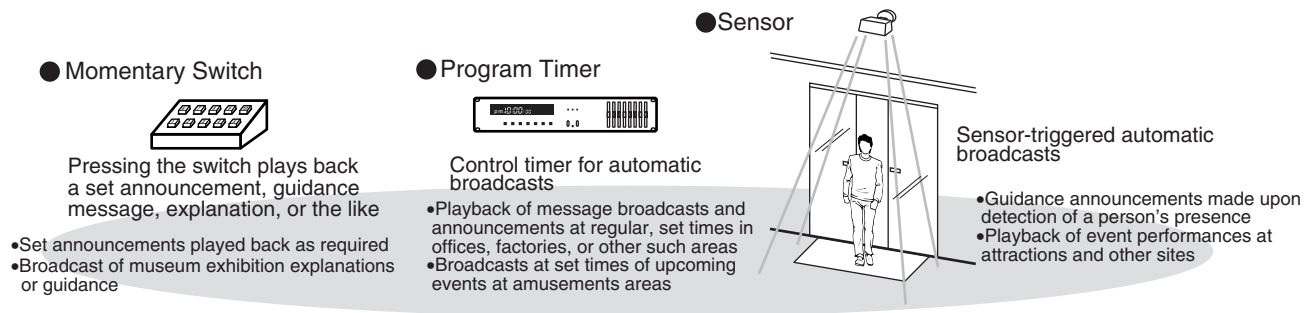
You can use the AR-200S alone or in combination with other AR-200S units or other equipment to play audio in a wide variety of scenes. This section shows some examples of these. You can use these examples as a starting point for making changes to match your own usage circumstances.

## Together with Other Equipment (System Examples)

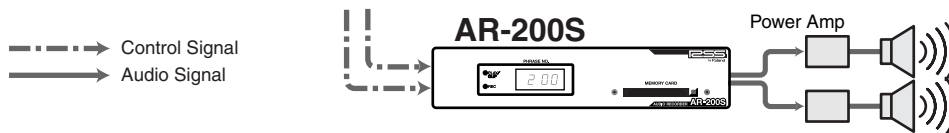
### Using the Control Input and Output Connectors

#### Control Input

Messages, explanations, warnings, announcements, effect sounds, and the like are played with high sound quality according to control signals from sensors, buttons, and switches (p. 10).



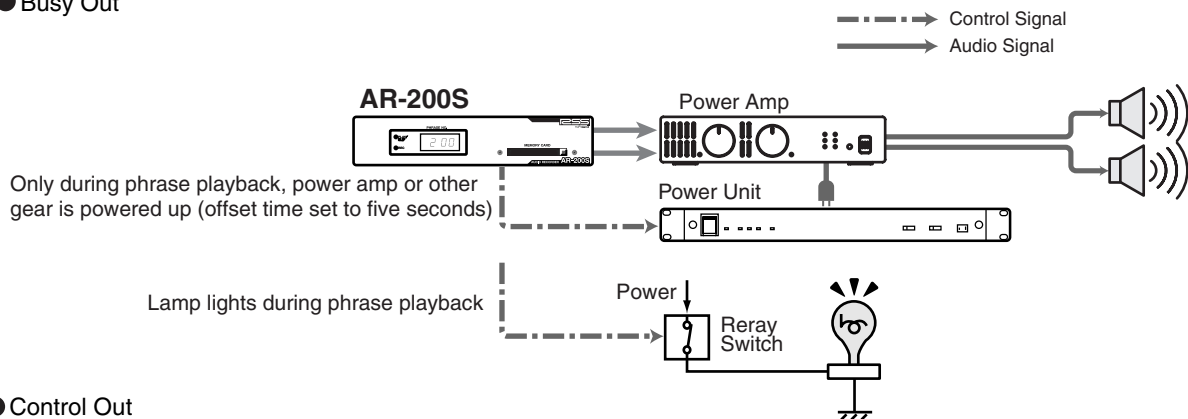
Types of External Control



#### Control Output

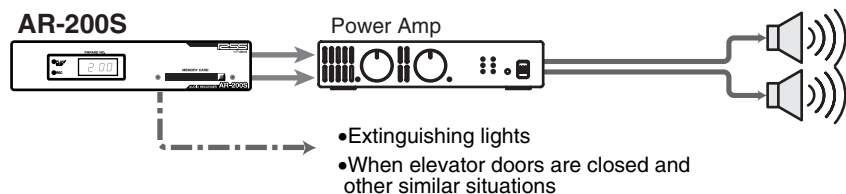
Control signals can be output during or after phrase playback to control an external device (p. 18).

##### ● Busy Out



##### ● Control Out

After playback ends, controls external device  
 \* A card formatted on the AR-2000 or AR-3000 is required.

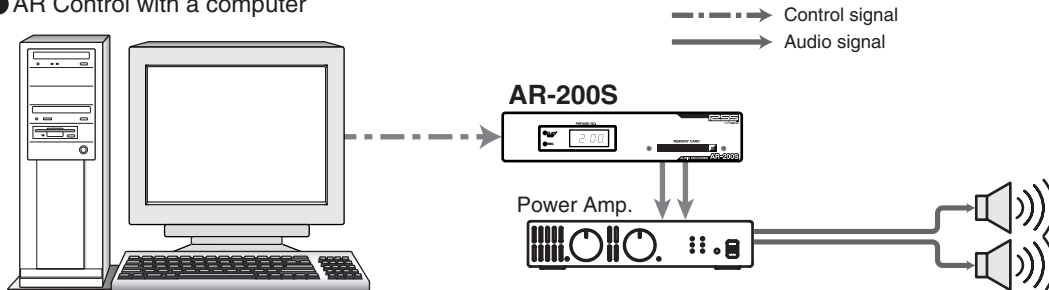




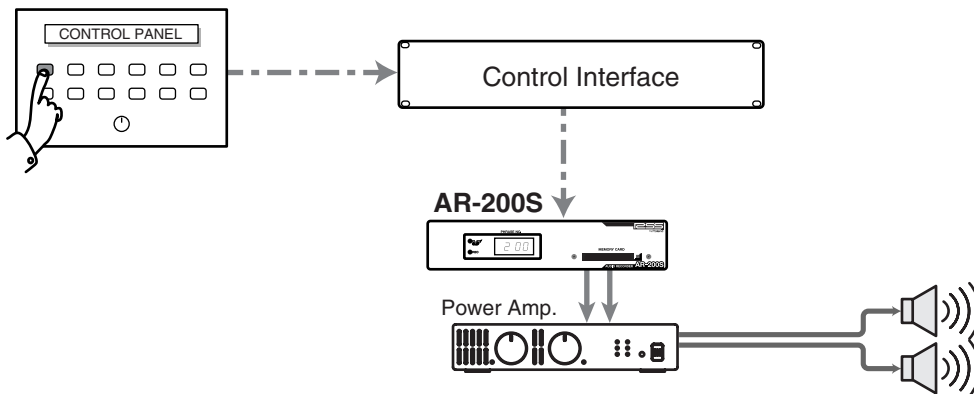
## Using the RS-232C Connector

By connecting an RS-232C cable, you can control the AR-200S from an external control device, such as a computer or touch panel (p. 17).

### ● AR Control with a computer



### ● Explanatory messages and guidance for public facilities and museum exhibits



## What You Can Do (Usage Tips)

### Repeat Playback of the Same Phrase

There are several methods for doing this. Choose a playback method that matches your usage conditions.

### Changing Playback Mode Settings to Interval Mode

You can have phrases be played back repeatedly at set intervals (p. 13).

### Inputting a Continuous Make-contact Signal to the Control Input Connectors

You can repeat playback by continuously shorting the control input connectors.

### Playing a Variety of Phrases in Succession

There are several methods for doing this. Choose a playback method that matches your usage conditions.

### Using Direct Playback of Control Input

By inputting control signals to a connector number from 1 through 9, you can play back the phrase assigned to the number (p. 11).

### Using Binary Playback of Control Input

You can select phrases by inputting binary signals to connector numbers 1 through 8, and play the selected phrases in succession each time you input control signals to the START connector (p. 12).

# Playback Instructions (Control Input Playback)

You can use the control input and DC input screw terminals (CONTROL A) and the 25-pin D-sub-type control I/O connector (CONTROL B) on the AR-2005's rear panel to control the AR-2005 from an external device. This chapter explains how to connect external devices and make the settings for the AR-2005.

\* The control I/O connector cannot be used to switch the power to the AR unit on or off.

## About Phrases

On the AR-2005, a single unit amount of recorded data (audio signals) is called a phrase. Phrases are managed using phrase numbers.

## Types of Control Input Playback

There are four types of control input playback: Playback by Card Data (p. 10), Direct Playback (Last-In) (p. 11), Binary Playback (p. 12), and Interval Playback (p. 13). You cannot use more than one type of playback at the same time.

## Operational Specifications for Control Input Playback

| Playback Mode             | When new control signals are input during playback of a phrase  | When control signals are input continuously |
|---------------------------|---|---|
| Direct Playback (Normal)  | A phrase in progress is stopped, and playback of another specified phrase is begun only when the control signal being input is of a higher priority than that of the phrase currently being played back | Repeated                                    |
| Direct Playback (Last-In) | Playback stopped, followed by playback of the specified phrase  | Repeated                                    |
| Interval Playback         | Playback stopped, followed by playback of the specified phrase  | Repeated                                    |
| Binary Playback           | Disabled  | Repeated                                    |

\* The AR-2005 features one type of control input recording, "Terminal Rec"(p. 14).

## What Is No-voltage/Make-contact?

This is contact that makes starting possible simply by connecting two lines to the control input connectors and shorting their ends. This is a general-use method that lets you create start systems easily using only a switch and without any need for a power source, enabling easy use for a variety of applications.

You can control playback and recording with the AR-2005 using On/Off signals from No-voltage/Make-contact input from an external source. By connecting infrared sensors or switches, relays, and timers, or other external starting connectors to the AR-2005, you can use the unit in an even wider variety of applications.

The AR-2005 can help simplify installation operations by making the starting-side contact hot and sharing the ground as the common connector.



For more on the control input specifications, refer to **Control I/O Connector Specifications** (p. 23) in the Appendices.

## Playback By Card Data

### Cards Created on the AR-3000 or AR-2000

Playback will use the settings (playback method) recorded in the card. For more information, please refer to the owner's manuals for each device.

\* Some functions are not available. (p. 21)

### Card made on the AR-200/100

Playback mode is available Direct Playback (Normal).

Phrases 1 through 9 are assigned to the control I/O connector Port Nos. 1 through 9.

## Direct Playback (Normal Playback)

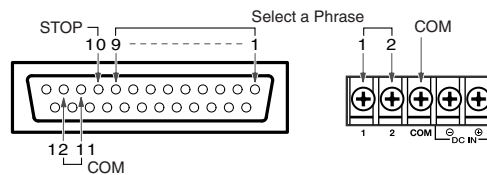
A phrase is played back when a control signal is input directly to the terminal with the number to which the phrase is assigned. Up to 9 phrases can be played back. Assign Phrases 1 through 9 beforehand to Port Nos. 1 through 9, respectively.

This makes it very convenient when you want to specify a desired phrase directly using a switch, relay, sensor, or other such means.

|                  |     |     |     |     |     |     |     |
|------------------|-----|-----|-----|-----|-----|-----|-----|
| A Control Signal | ↓   | ↓   | ↓   | ↓   | ↓   | ... | ↓   |
| Port No.         | 1   | 2   | 3   | 4   | 5   | ... | 9   |
| Phrase           | 001 | 002 | 003 | 004 | 005 | ... | 009 |

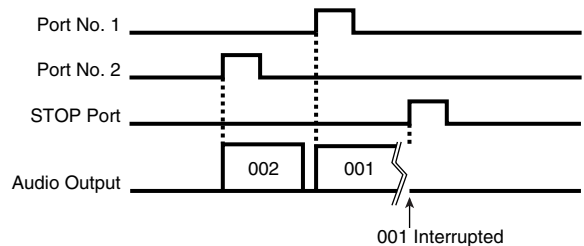
## Connectors Used for Direct Play (Control I/O Connector)

|             |  |
|-------------|--|
| 1-9         | Inputting a control signal directly to the terminal with the number corresponding to the phrase starts playback of the phrase. |
| 10 (STOP)   | This stops phrase playback.  |
| 11/12 (COM) | Shorting with the above terminals results in "ON."   |



\* Control Input and DC Input Terminal (CONTROL A) "1, 2" are connected in parallel with Control I/O Connector (CONTROL B) "1, 2."

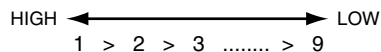
## Basic Operation of Direct Playback (Normal Playback)



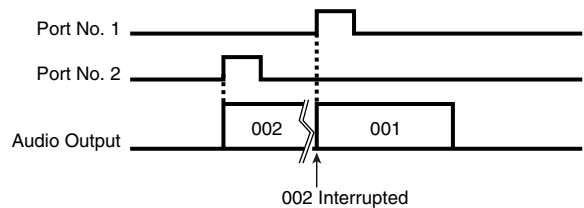
**Playback:** Input a control signal to a Port, 1-9.  
→ The phrase assigned to the Port is played back.

**Stopping:** Input a control signal to Port 10 (STOP).  
→ Playback of the phrase is stopped.

## Terminal Priorities

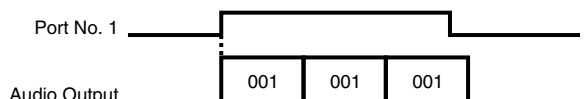


- **When a new high-priority control signal is input during phrase playback**  
Playback of the current phrase is stopped, and playback of the specified phrase begins.



\* If a control signal has a lower priority than that of the phrase currently being played back, the specified phrase is not played back.

- **While the control signal is continuously input**  
Playback is repeated while the signal is input.



**AR-200S Settings**

**Selecting the Control Input Mode**

With the power to the AR-200S switched off, set the MODE switches on the bottom panel as shown below.

SW 1: OFF, SW 2: OFF

**Assigning Phrases to the Terminals**

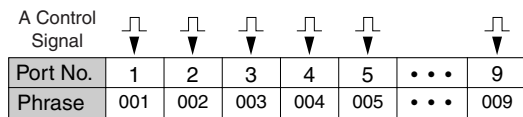
Assign phrases 1 through 9 to Port Nos. 1 through 9.

**Settings in Effect When a Card Is Formatted**

|          |     |     |     |     |     |     |     |
|----------|-----|-----|-----|-----|-----|-----|-----|
| Port No. | 1   | 2   | 3   | 4   | 5   | ... | 9   |
| Phrase   | 001 | 002 | 003 | 004 | 005 | ... | 009 |

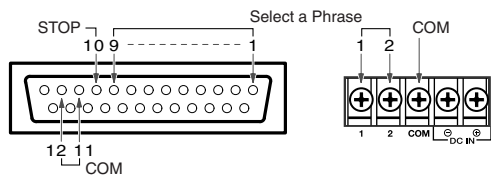
**Playing Back Phrases Assigned to the Connectors (Direct Playback)**

By inputting control signals directly to Port Nos. 1 through 9, you can play back the phrases assigned to those numbers. Up to 9 phrases can be played back. Assign phrases 1 through 9 beforehand to Port Nos. 1 through 9. This is very convenient when you want to specify a desired phrase directly using a switch, relay, sensor, or other such means.



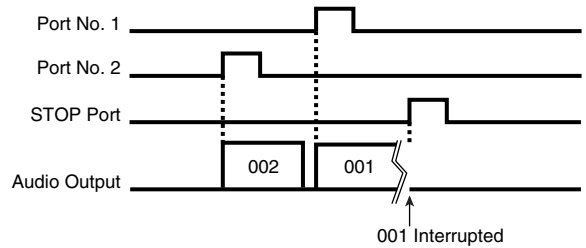
**Connectors Used for Direct Play (Last-In) (Control I/O Connector)**

|                    |  |
|--------------------|--|
| <b>1-9</b>         | Inputting a control signal directly to the terminal with the number corresponding to the phrase starts playback of the phrase. |
| <b>10 (STOP)</b>   | This stops phrase playback.  |
| <b>11/12 (COM)</b> | Shorting with the above terminals results in "ON."   |



\* Control Input and DC Input Terminal (CONTROL A) "1, 2" are connected in parallel with Control I/O Connector (CONTROL B) "1, 2."

**Operational Specifications for Direct Playback (Last-In)**



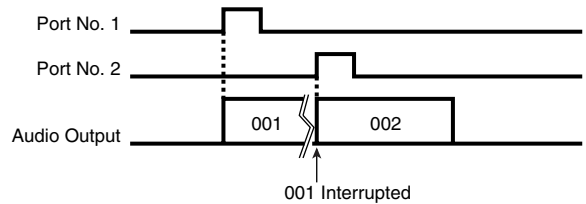
**Playback:** Input a control signal to a Port, 1-9.  
→ The phrase assigned to the Port is played back.

**Stopping:** Input a control signal to Port 10 (STOP).  
→ Playback of the phrase is stopped.

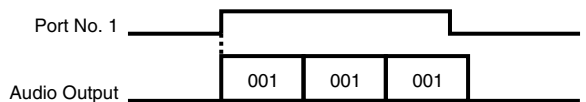
**Priority Order**

The most recently input control signal is given priority in playback.

- **If a new and different control signal is input during playback of a phrase**  
Playback of the current phrase is stopped, and playback of the specified phrase then begins.



- **While the control signal is continuously input**  
Playback is repeated while the signal is input.



**AR-200S Settings**

**Selecting the Control Input Mode**

With the power to the AR-200S switched off, set the MODE switches on the bottom panel as shown below.

SW 1: ON, SW 2: OFF

**Assigning Phrases to the Terminals**

Assign phrases 1 through 9 to Port Nos. 1 through 9.

**Settings in Effect When a Card Is Formatted**

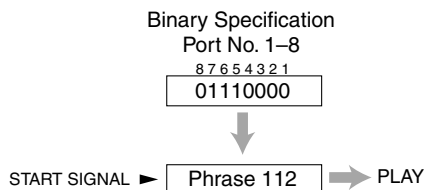
|          |     |     |     |     |     |     |     |
|----------|-----|-----|-----|-----|-----|-----|-----|
| Port No. | 1   | 2   | 3   | 4   | 5   | ... | 9   |
| Phrase   | 001 | 002 | 003 | 004 | 005 | ... | 009 |

## Playback Instructions (Control Input Playback)

### Specifying Phrases in Binary Notation (Binary Playback)

By inputting binary (Base 2) signals to Port Nos. 1 through 8 to select a phrase and inputting a start message to the START terminal, you can then play back the selected phrase. A maximum of 250 phrases can be selected and played back with this method.

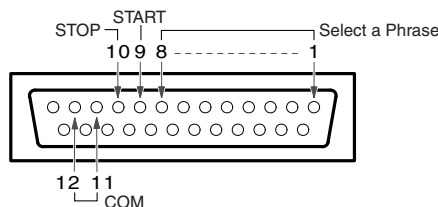
This allows you to specify 250 phrases with control signals (from a switch or other ON/OFF signal device), without having to use computers or other complicated equipment.



\* To conduct Binary Playback, you will need to obtain a control device capable of generating binary signals.

### Connectors Used in Binary Playback

|             |  |
|-------------|--|
| 1-8         | Phrases are specified in binary format using combinations of 0 (Off) and 1 (On). |
| 9 (START)   | Starts phrase playback.  |
| 10 (STOP)   | Stops phrase playback.   |
| 11/12 (COM) | Shorting with the above terminals results in "ON."                               |



#### MEMO

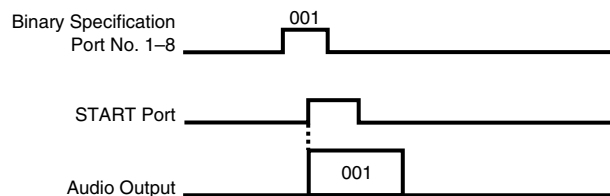
Even without connecting to all eight connectors used for making the binary specifications, you can still conduct Binary Playback. The number of phrases that can be specified is determined by the formula "two to the nth power minus one" (with "n" being the number of connectors used).

#### Example:

Using three timers or other such devices capable of outputting the necessary signals gives two to the third power minus one (i.e.,  $2^3 - 1 = 7$ ), meaning you can specify the seven phrases 001 through 007.

However, start signals feature other special requirements.

### Operational Specifications of Binary Playback



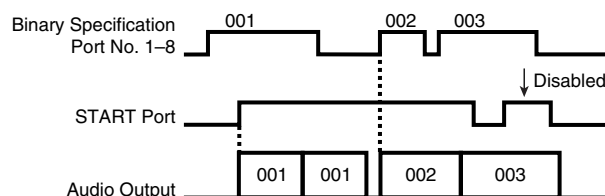
**Playback:** Specify the phrases using combinations of 0 (Off) and 1 (On) signals to Port Nos. 1 through 8, and Port Nos. 11 and 12, and input a control signal to the Port No. 9 (START).

→ This plays back the specified phrase.

**Stopping:** Input a control signal to Port No. 10 (STOP).

→ This stops playback of the phrase.

The basic operation of Binary Playback is shown below.



- Binary specified phrases are played back repeatedly.
- Playback is repeated while the start signal is continuously input.
- You can begin playback of phrases by specifying phrases in binary with the start signal continuously being input.
- When the START connector control signal switches to Off, the current phrase finishes, and then playback is stopped.
- No action results when a new start signal is input while a phrase is being played back.

### AR-200S Settings

With the power to the AR-200S switched off, set the MODE switches on the bottom panel as shown below.

SW 1: OFF, SW 2: ON

### To Specify Phrases with Binary Signals

**Example:** Specifying Phrase 112 (Phrase #: 112)

Convert the phrase number to a binary signal number.

"0" (Off), "1" (On)

According to the **Phrase Number / Binary Signal chart** (p. 13), the phrase number "112" is converted to the binary number "01110000."

|              |   |                                    |   |   |   |   |   |   |   |
|--------------|---|------------------------------------|---|---|---|---|---|---|---|
| Port No.     | → | 8                                  | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Input Signal | → | 0                                  | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
|              |   | └────────────────────────────────┘ |   |   |   |   |   |   |   |
|              |   | Phrase Number (Binary)             |   |   |   |   |   |   |   |

#### NOTE

Input of binary specifications should be completed in no more than 50 milliseconds.

## Playback Instructions (Control Input Playback)

### Repeated Playback of Phrases (Interval Playback)

The specified phrase will be played back at fixed intervals. Make each of the terminal settings beforehand for the playback interval and phrases to be played back.

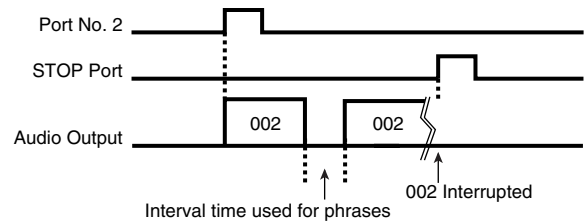
- When making settings in Interval Playback mode, assign Phrases 1 through 9 to the control output connectors 1 through 9.
- The playback interval settings are shown below.

| Port No. | Playback Interval |
|----------|-------------------|
| 1        | 1 second          |
| 2        | 5 seconds         |
| 3        | 10 seconds        |
| 4        | 15 seconds        |
| 5        | 30 seconds        |
| 6        | 1 minute          |
| 7        | 5 minutes         |
| 8        | 15 minutes        |
| 9        | 30 minutes        |

### Phrase Number / Binary Signal chart

| Phrase No. | Binary (Port 87654321) | Phrase No. | Binary (Port 87654321) | Phrase No. | Binary (Port 87654321) | Phrase No. | Binary (Port 87654321) | Phrase No. | Binary (Port 87654321) |
|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|
| 001        | 00000001               | 051        | 00110011               | 101        | 01100101               | 151        | 10010111               | 201        | 11001001               |
| 002        | 00000010               | 052        | 00110100               | 102        | 01100110               | 152        | 10011000               | 202        | 11001010               |
| 003        | 00000011               | 053        | 00110101               | 103        | 01100111               | 153        | 10011001               | 203        | 11001011               |
| 004        | 00000100               | 054        | 00110110               | 104        | 01101000               | 154        | 10011010               | 204        | 11001100               |
| 005        | 00000101               | 055        | 00110111               | 105        | 01101001               | 155        | 10011011               | 205        | 11001101               |
| 006        | 00000110               | 056        | 00111000               | 106        | 01101010               | 156        | 10011100               | 206        | 11001110               |
| 007        | 00000111               | 057        | 00111001               | 107        | 01101011               | 157        | 10011101               | 207        | 11001111               |
| 008        | 00001000               | 058        | 00111010               | 108        | 01101100               | 158        | 10011110               | 208        | 11010000               |
| 009        | 00001001               | 059        | 00111011               | 109        | 01101101               | 159        | 10011111               | 209        | 11010001               |
| 010        | 00001010               | 060        | 00111100               | 110        | 01101110               | 160        | 10100000               | 210        | 11010010               |
| 011        | 00001011               | 061        | 00111101               | 111        | 01101111               | 161        | 10100001               | 211        | 11010011               |
| 012        | 00001100               | 062        | 00111110               | 112        | 01110000               | 162        | 10100010               | 212        | 11010100               |
| 013        | 00001101               | 063        | 00111111               | 113        | 01110001               | 163        | 10100011               | 213        | 11010101               |
| 014        | 00001110               | 064        | 01000000               | 114        | 01110010               | 164        | 10100100               | 214        | 11010110               |
| 015        | 00001111               | 065        | 01000001               | 115        | 01110011               | 165        | 10100101               | 215        | 11010111               |
| 016        | 00010000               | 066        | 01000010               | 116        | 01110100               | 166        | 10100110               | 216        | 11010100               |
| 017        | 00010001               | 067        | 01000011               | 117        | 01110101               | 167        | 10100111               | 217        | 11010101               |
| 018        | 00010010               | 068        | 01000100               | 118        | 01110110               | 168        | 10101000               | 218        | 11010110               |
| 019        | 00010011               | 069        | 01000101               | 119        | 01110111               | 169        | 10101001               | 219        | 11010111               |
| 020        | 00010100               | 070        | 01000110               | 120        | 01111000               | 170        | 10101010               | 220        | 11011100               |
| 021        | 00010101               | 071        | 01000111               | 121        | 01111001               | 171        | 10101011               | 221        | 11011101               |
| 022        | 00010110               | 072        | 01001000               | 122        | 01111010               | 172        | 10101100               | 222        | 11011110               |
| 023        | 00010111               | 073        | 01001001               | 123        | 01111011               | 173        | 10101101               | 223        | 11011111               |
| 024        | 00011000               | 074        | 01001010               | 124        | 01111100               | 174        | 10101110               | 224        | 11100000               |
| 025        | 00011001               | 075        | 01001011               | 125        | 01111101               | 175        | 10101111               | 225        | 11100001               |
| 026        | 00011010               | 076        | 01001100               | 126        | 01111110               | 176        | 10110000               | 226        | 11100010               |
| 027        | 00011011               | 077        | 01001101               | 127        | 01111111               | 177        | 10110001               | 227        | 11100011               |
| 028        | 00011100               | 078        | 01001110               | 128        | 10000000               | 178        | 10110010               | 228        | 11100100               |
| 029        | 00011101               | 079        | 01001111               | 129        | 10000001               | 179        | 10110011               | 229        | 11100101               |
| 030        | 00011110               | 080        | 01010000               | 130        | 10000010               | 180        | 10110100               | 230        | 11100110               |
| 031        | 00011111               | 081        | 01010001               | 131        | 10000011               | 181        | 10110101               | 231        | 11100111               |
| 032        | 00100000               | 082        | 01010010               | 132        | 10000100               | 182        | 10110110               | 232        | 11101000               |
| 033        | 00100001               | 083        | 01010011               | 133        | 10000101               | 183        | 10110111               | 233        | 11101001               |
| 034        | 00100010               | 084        | 01010100               | 134        | 10000110               | 184        | 10111000               | 234        | 11101010               |
| 035        | 00100011               | 085        | 01010101               | 135        | 10000111               | 185        | 10111001               | 235        | 11101011               |
| 036        | 00100100               | 086        | 01010110               | 136        | 10001000               | 186        | 10111010               | 236        | 11101100               |
| 037        | 00100101               | 087        | 01010111               | 137        | 10001001               | 187        | 10111011               | 237        | 11101101               |
| 038        | 00100110               | 088        | 01011000               | 138        | 10001010               | 188        | 10111100               | 238        | 11101110               |
| 039        | 00100111               | 089        | 01011001               | 139        | 10001011               | 189        | 10111101               | 239        | 11101111               |
| 040        | 00101000               | 090        | 01011010               | 140        | 10001100               | 190        | 10111110               | 240        | 11110000               |
| 041        | 00101001               | 091        | 01011011               | 141        | 10001101               | 191        | 10111111               | 241        | 11110001               |
| 042        | 00101010               | 092        | 01011100               | 142        | 10001110               | 192        | 11000000               | 242        | 11110010               |
| 043        | 00101011               | 093        | 01011101               | 143        | 10001111               | 193        | 11000001               | 243        | 11110011               |
| 044        | 00101100               | 094        | 01011110               | 144        | 10010000               | 194        | 11000010               | 244        | 11110100               |
| 045        | 00101101               | 095        | 01011111               | 145        | 10010001               | 195        | 11000011               | 245        | 11110101               |
| 046        | 00101110               | 096        | 01100000               | 146        | 10010010               | 196        | 11000100               | 246        | 11110110               |
| 047        | 00101111               | 097        | 01100001               | 147        | 10010011               | 197        | 11000101               | 247        | 11110111               |
| 048        | 00110000               | 098        | 01100010               | 148        | 10010100               | 198        | 11000110               | 248        | 11110100               |
| 049        | 00110001               | 099        | 01100011               | 149        | 10010101               | 199        | 11000111               | 249        | 11110101               |
| 050        | 00110010               | 100        | 01100100               | 150        | 10010110               | 200        | 11001000               | 250        | 11110110               |

### Operational Specifications of Interval Playback



**Playback:** Input control signals to the control Input/output connectors No. 1 through 9.

→ Results in the repeated play of the phrase assigned to the terminal.

**Stopping:** Input a control signal to Port No. 10 (STOP).

→ This stops playback of the phrase.

### AR-200S Settings

With the power to the AR-200S switched off, set the MODE switches on the bottom panel as shown below.

**SW 1: ON, SW 2: ON**

# Recording Instructions (Terminal Rec)

## Required Settings for Recording Audio Signals (Recording Settings)

In order to perform recording matched to usage conditions, including the connected equipment, recording source, sound quality, time, and playback system, you make recording settings.

- Recording settings are made in phrase units. You can mix phrases having different recording settings on a single card.
- The possible recording time of a card varies according to the recording settings. For a rough guide to maximum recording times with various settings, see **Card Audio Recording Time Chart** (p. 21).

### MODE SW Setting

With the power to the AR-200S switched off, set the MODE switches on the bottom panel as shown below.

SW 6: ON

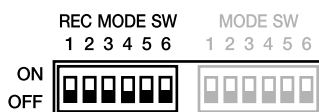
### REC MODE SW Settings

The REC MODE switches are located on the AR-200S's bottom panel. You can change the recording settings by changing the settings of the REC MODE switches.

Each switch is ON when in the upward position, and OFF when in the downward position.

When the AR-200S is shipped from the factory, all switches will be OFF.

- Use a pointed object to change the ON/OFF settings of the REC MODE switches.
- Set the REC MODE switches with the power to the AR-200S turned off.



## RDAC-Grade (Sampling Frequency)

The RDAC grade is the type of sampling frequency for digital recording. On the AR-200S, you can select from among six grades.

| RDAC-Grade | Sampling frequency | Sound quality  | Amount of card memory consumed |
|------------|--------------------|----------------|--------------------------------|
| S-HIGH     | 48kHz              | High<br>↑<br>↓ | Large<br>↑<br>↓<br>Small       |
| HIGH       | 44.1kHz            |                |                                |
| STANDARD   | 32kHz              |                |                                |
| LONG1      | 22.05kHz           |                |                                |
| LONG2      | 16kHz              |                |                                |
| ANNOUNCE   | 8kHz               |                |                                |

STANDARD is best for ordinary recording. ANNOUNCE uses up the least card space, and is best for recording announcements, narration, and the like. When you are recording audio such as a narration with ANNOUNCE or LONG2, you can record with higher clarity by using the equalizer to cut the bass range. Select an RDAC grade that matches the circumstances of use.

### Selecting RDAC-Grade

With the power to the AR-200S turned off, set the REC MODE switches on the bottom panel as shown below.

| RDAC-Grade | SW 1 | SW 2 | SW 3 |
|------------|------|------|------|
| S-HIGH     | ON   | OFF  | ON   |
| HIGH       | OFF  | OFF  | ON   |
| STANDARD   | ON   | ON   | OFF  |
| LONG1      | OFF  | OFF  | OFF  |
| LONG2      | OFF  | ON   | OFF  |
| ANNOUNCE   | ON   | OFF  | OFF  |

## RDAC-Mode (Signal Processing Format)

The RDAC mode is a type of digital data processing system for recording. On the AR-200S, you can select from among four modes.

| RDAC-Mode |   | Sound quality  | Amount of card memory consumed |
|-----------|---|----------------|--------------------------------|
| LINEAR    | 16 bit PCM Recording                              | High<br>↑<br>↓ | Large<br>↑<br>↓<br>Small       |
| MODE3     | About 2.5 times the recording time of LINEAR.     |                |                                |
| MODE2     | More than 2.5 times the recording time of LINEAR. |                |                                |
| MODE1     | About 4 times the recording time of LINEAR.       |                |                                |

### Selecting RDAC-Mode

With the power to the AR-200S turned off, set the REC MODE switches on the bottom panel as shown below.

| RDAC-Mode | SW 4 | SW 5 |
|-----------|------|------|
| LINEAR    | ON   | ON   |
| MODE3     | OFF  | ON   |
| MODE2     | ON   | OFF  |
| MODE1     | OFF  | OFF  |

### MEMO

If the type of card does not provide the recording time you want, change the RDAC mode or RDAC grade setting to use less card capacity, then perform recording again.

### cf.

Card Audio Recording Time Chart (p. 21)

### What's RDAC?

RDAC (Roland Digital Audio Coding) is a proprietary audio recording standard from Roland. It achieves high sound quality and also makes it possible to record for long times.

### If You're Not Sure About Which Grade and Mode to Choose

The optimal grade and mode vary according to the usage conditions, including the connected equipment, recording source, sound quality, time, and playback system.

The factory default settings are RDAC-Grade: LONG1; and RDAC-Mode: MODE1.

First, try recording and playback with these settings. In most cases, this yields satisfactory sound quality.

# Recording Instructions (Terminal Rec)

## Recording Type (Stereo/Mono)

Select either stereo recording or mono recording. Choosing mono recording gives you recording times that are twice as long as with stereo recording.

## Selecting Recording Type

With the power to the AR-200S turned off, set the REC MODE switches on the bottom panel as shown below.

| Recording Type | SW 6 |
|----------------|------|
| Stereo         | ON   |
| Mono           | OFF  |

## What is mono recording

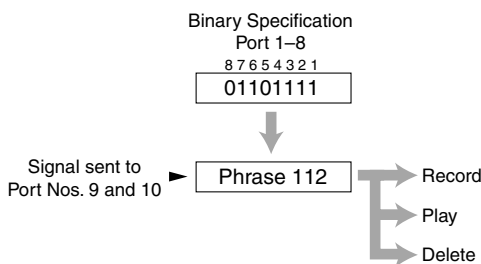
In the case of mono recording, input the audio signal to the "MONO/L" input terminal. When audio signals are input simultaneously to the "MONO/L" and "R" input terminals, L and R are mixed and recorded.

## Line Thru Output (p. 19)

- REC MODE SW 6: OFF (Mono)  
When audio signals are input to "MONO/L," output is from OUTPUT L and R. When audio signals are input to "R," output is from OUTPUT R only. When audio signals are input to both "MONO/L" and "R," solely the signals input to "MONO/L" are output from OUTPUT L, while the "MONO/L" and "R" signals are mixed and output from OUTPUT R.
- REC MODE SW 6: ON (Stereo)  
Audio signals input to "MONO/L" are output from OUTPUT L, and audio signals input to "R" are output from OUTPUT R.

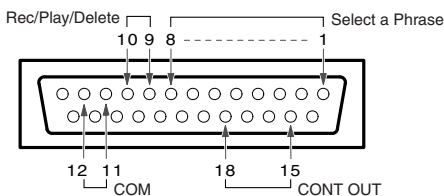
## Connectors Used in Terminal Rec

You can specify phrases by inputting binary (base 2) signals to the Port Nos. 1 through 8, and perform record, playback, and delete functions by inputting control signals to Port Nos. 9 and 10. A total of 250 phrases can be specified with control signals (On/Off). This is convenient when you want to control recording from an external control device.



\* To conduct binary control, you need to provide a control device that can generate binary signals.

|                  |  |
|------------------|--|
| 1-8              | Phrases are specified in binary format using combinations of 0 (Off) and 1 (On).     |
| 9, 10            | Combinations of 0 (Off) and 1 (On) are used to specify record, delete, and playback. |
| 15/18 (CONT OUT) | Outputs signals for confirming the presence or absence of phrases.                   |
| 11/12 (COM)      | Shorting with the above terminals results in "ON."                                   |



## Operational Specifications for Terminal Rec

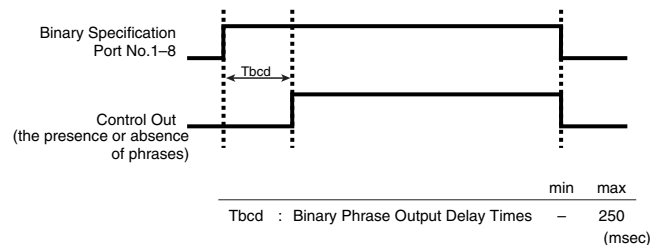
Phrases are specified by combinations of signals of 0 (Off) and 1 (On) to the Port Nos. 1 through 8 as well as Port Nos. 11 and 12, and record, playback, and delete functions are specified with combinations of control signals of 0 (Off) and 1 (On) to Port Nos. 9 and 10.

### Presence or Absence of Phrases

If there is a binary-specified phrase that has already been recorded, a signal is output from the CONT OUT connector (Port No. 15). If there is an empty phrase, no signal is output.

- \* During Terminal Rec, the CONT OUT connector functions as a connector for signals confirming the presence or absence of phrases. Note that this differs from the normal function of CONT OUT.

Timing Chart (The presence or absence of phrases)



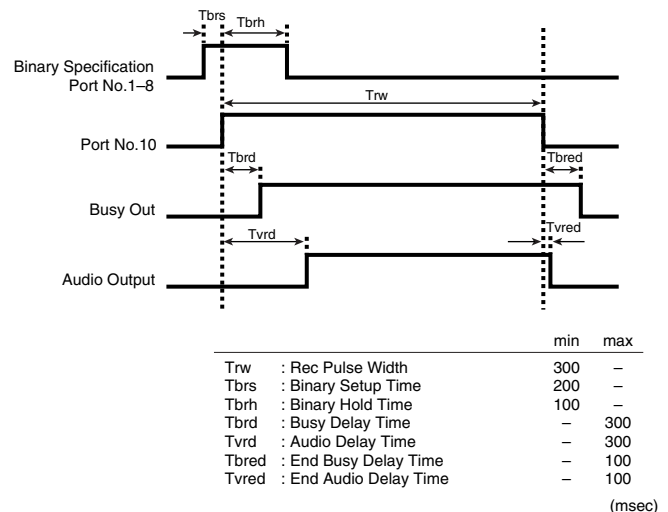
## Recording

9: 0 (Off)

10: 1 (On)

While control signals are being input, the specified phrase is recorded. When input of the control signal stops, recording then ends.

Timing Chart (Rec)



- \* Recording does not start if there is a binary-specified phrase that has already been recorded (the recording instruction is disabled). When recording, either specify an empty phrase or delete the existing phrase before recording the new one. Additionally, in Terminal Rec, since a make signal is output from the CONT OUT connector when a specified phrase has already been recorded, this allows confirmation using a connected external control device.
- \* The remaining recording time appears in the display when ten seconds or less of recording time remains.
- \* When you're using the Terminal Recording Mode, recording takes place immediately, without entering trigger recording standby.
- \* Use the INPUT VOLUME knob to adjust the recording level so that the PLAY/CLIP indicator does not light.



# Recording Instructions (Terminal Rec)

## Playback

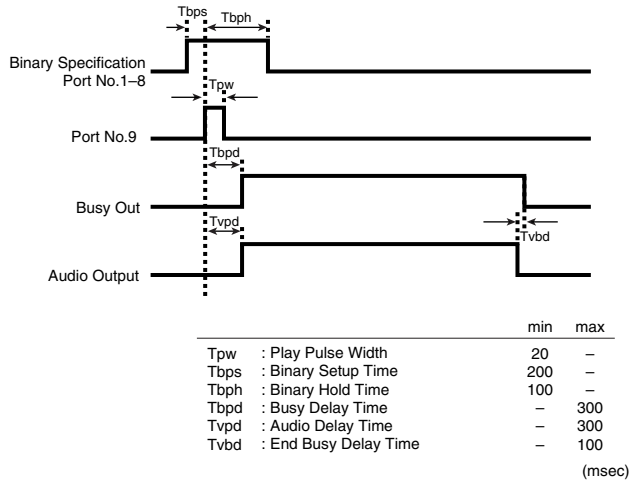
9: 1 (On)

10: 0 (Off)

The specified phrase is played back.

Even when control signals are input continuously, the phrase is played back one time only and then ends.

Timing Chart (PLAY)



\* Playback does not begin if the binary-specified phrase is empty (the playback instruction is disabled). When playing back, specify a phrase that has already been recorded.

## Delete

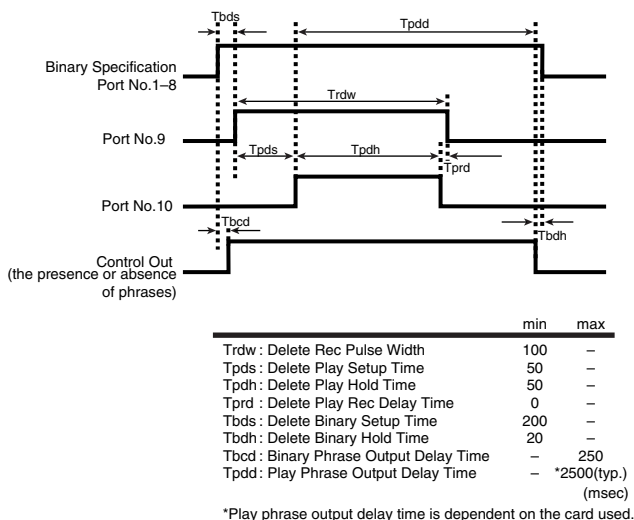
9: 1 (On)

10: 1 (On)

First, when ON is input to Port No. 10, and then ON is input to Port No. 9, deletion of the specified phrase begins. Deletion ends when the signal from the CONT OUT connector confirming the presence or absence of the phrase changes to OFF.

\* Deletion does not begin if the binary-specified phrase is empty (the delete instruction is disabled). When deleting, specify a phrase that has already been recorded.

Timing Chart (Delete)



\*Play phrase output delay time is dependent on the card used.

## To Specify Phrases with Binary Signals

### NOTE

Note that the way phrases are specified in Terminal Rec differs from that used in Binary Playback.

**Example:** Binary specification of Phrase 112 (Phrase #: 112)

Convert the phrase number to a binary signal number.

"0" (Off), "1" (On)

The phrase number "0001" is specified in the binary notation as

"00000000," and as shown in the **Phrase Number / Binary Signal chart** (p. 13), each subsequent specification is shifted by one.

| Phrase No. | 87654321 | Port No. |
|------------|----------|----------|
| 001        | →        | 00000000 |
| 002        | ↗        | 00000010 |
| 003        | ↗        | 00000011 |
| 004        | ↗        | 00000100 |
| 005        | ↗        | 00000101 |
| 006        | ↗        | 00000110 |
| 007        |          | 00000111 |
| .          |          | .        |
| .          |          | .        |
| .          |          | .        |
| .          |          | .        |
| .          |          | .        |
| 248        | ↗        | 11111000 |
| 249        | ↗        | 11111001 |
| 250        | ↗        | 11111010 |

The phrase number "112" becomes the binary signal "01101111."



# About Control Using RS-232C

The AR-2005 can be controlled using serial communications from a computer, touch panel, or other device via RS-232C. You can control a number of operations including recording, playback, switching settings, and editing phrases.

The data transfer rate when the power is turned on and no card is inserted is 9,600 bps.

## About RS-232C References

In addition to the owner's manual, the separate publication "RS-232C Reference Notes" is also available for those needing detailed documentation regarding RS-232C connector control.

Please download the PDF file (free of charge) from the following URL.

RS-232C Reference Notes cover the following topics:

- Setup
- Overviews, detailed descriptions, and lists of commands
- Examples of usage algorithms

<http://www.rssamerica.com/>

# Controlling Another Device with the AR-200S (Control Output Connectors)

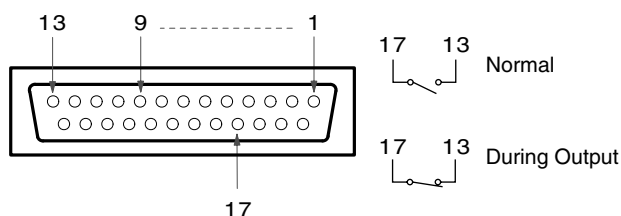
You can use the 25-pin D-sub-type control I/O connector (CONTROL B) on the AR-200S's rear panel to control an external device from the AR-200S. The AR-200S outputs two kinds of control signals, Busy Out and Control Out. This chapter explains how to connect external devices and make the settings for the AR-200S.

## Starting Another Device (Busy Out)

Busy Out is a continuous signal output from the BUSY OUT pins during playback (as well as during recording and recording standby) of audio phrases, pattern phrases, and song phrases. This signal can be used to start amplifiers and other external devices in sync with phrase playback.

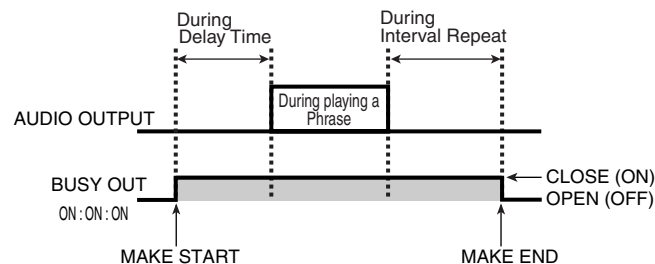
### Busy Out Specifications

No-voltage/make-contact  
**Contact capacity:** Max. DC 30 V, 3 A  
 Port Nos. 13 and 17 have Make-contact during output.



### Output of Busy Out Signals In Dual Mono Mode (p. 19)

When in Dual Mono mode, the Busy Out signal of the left channel is output from the BUSY OUT pins (Port Nos. 13 and 17), and the right channel Busy Out signal is output from the CONT OUT pins (Port Nos. 15 and 18).



## Controlling Another Device (Control Out)

The Control Out signal is output for a duration of one second from the CONT OUT pins after playback of audio phrases, pattern phrases, and song phrases. This signal can be used to start amplifiers and other external devices in sync with phrase playback.

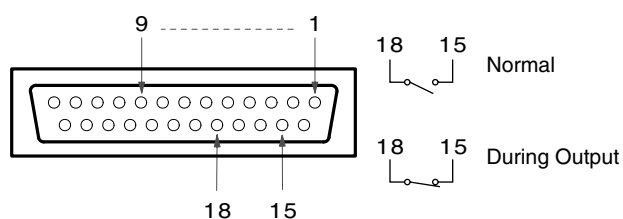
You can set the time that is to pass after phrase playback before output is made to anything from 0 seconds to 59 minutes 59 seconds. Settings are made in phrase units.

### NOTE

Note that if playback of a phrase in progress is cut off, no Control Out signal is output.

### Control Out Specifications

No-voltage/make-contact  
**Make-contact time:** 1 second, **Contact capacity:** Max. DC 30 V, 3 A  
 Port Nos. 15 and 18 have Make-contact during output.



### Output of Control Out Signals In Dual Mono Mode (p. 19)

Note that Control Out signals are not output in Dual Mono Mode (the Control Out settings are not effective).

In such instances, if the Busy Out output settings have been made, then the Busy Out signal of the left channel is output from the BUSY OUT pins (Port Nos. 13 and 17), and right channel's Busy Out signal is output from the CONT OUT pins (Port Nos. 15 and 18).

### AR-200S Settings

Settings for these parameters cannot be made with the AR-200S. Only phrases set on the AR-3000 are effective. For detailed information, please refer to the AR-3000 owner's manual.

# Other Useful Functions During Phrase Playback

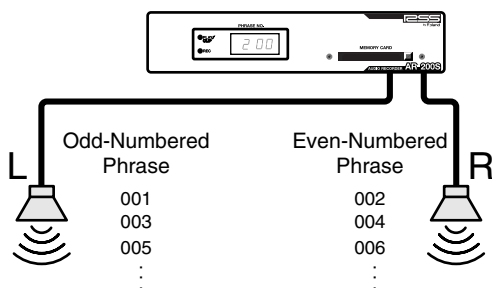
Moreover, by using an optional AR-3000 to create and edit phrases, you can also use the following functions.

For detailed information, please refer to the AR-3000 owner's manual.

\* You cannot make settings for these parameters on the AR-200S. Furthermore, they are effective only with phrases whose settings have been made on the AR-3000.

## Playing Data for Two Units on the Left and Right (Dual Mono Mode)

The Dual Mono mode is a feature for playing different mono audio phrases independently on the left and right channels. By outputting odd-numbered phrases (001, 003, ...) from the left channel and even-numbered phrases (002, 004, ...) from the right channel, you can play back two units' worth of phrases using only the one device. You can also play back separate phrases on the left and right channels either simultaneously, or shifted.



### MEMO

#### To Users of the AR-2000/100 (Legacy Models)

On the AR-2000/100 (legacy models), this "Dual Mono Mode" is the function called "Channel Playback Mode." When using them, please try to keep in mind that the two functions are identical.

## Adjusting the Sound Quality During Audio Phrase Playback (EQ—Equalizer)

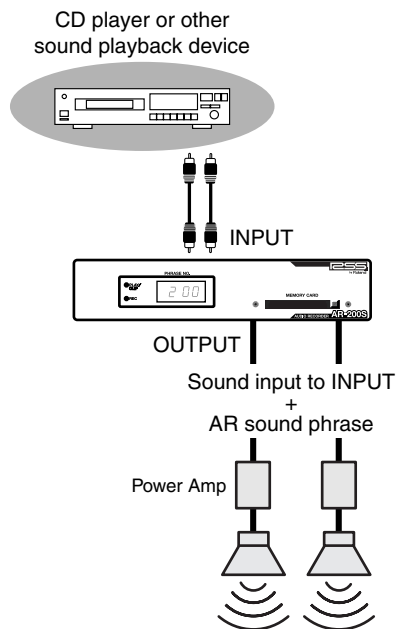
You can adjust the quality of the sound during audio phrase playback with two-band equalization.

## Playing Back Phrases in the Order They Are Selected (Program Playback)

You can have the group of preset phrases play back in the order they are selected by inputting a control signal to the START port. With program playback, you can register up to a maximum of 100 phrases in each of the five patterns of Programs 1 through 5. Since the order and duration of the phrases is predetermined, this is a convenient option when you have only one contact, such as a timer or switch, with which to trigger this action.

## Line Out (Thru) Setting During Phrase Playback

You can take audio from INPUT, mix it during phrase playback, and mixed it from OUTPUT.



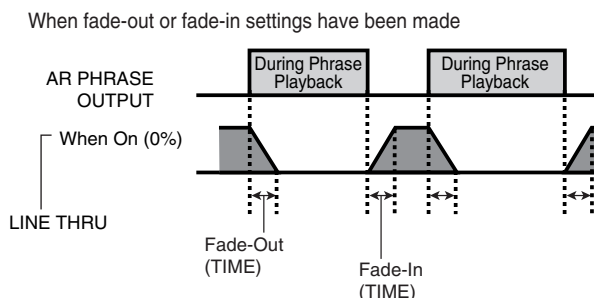
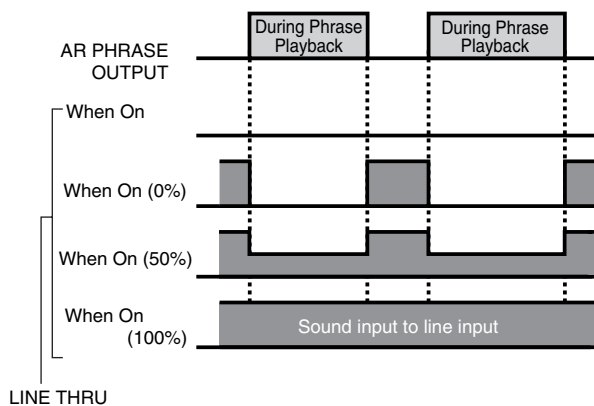
This is useful when you want to do things like taking music from INPUT and layering it with narration phrases as background music. You can also make the Input sound fade out or in.

### NOTE

Line throughput is possible only for signals connected to the INPUT terminals.

## Line Thru Output Specifications

The following output specifications apply, depending on the Line Thru settings.



# Troubleshooting

## About playback

### Control Input Playback (Direct/Binary) does not work as intended

- Make sure the MODE switches' settings (Direct/Binary) are selected correctly. You cannot achieve control input playback merely by connecting a device to the port. Be sure to set the control input mode and match the method used for connecting to the connectors (p. 22).

### Phrases in Direct Playback cannot be selected as intended

- When the card is formatted, phrase assignments for Port Nos. 1 through 9 are such that Phrase 001 is assigned to Port No. 1, Phrase 002 to Port No. 2, and so on up to Phrase 009, which is assigned to Port No. 9. Check to make sure that the phrases are properly selected.

### Phrases play repeatedly in Direct Playback

- Check to make sure that "INTERVAL PLAYBACK" is not selected with the MODE switch settings (p. 22).

## Card made on the AR-3000

### Phrases are not played back (PLAY indicator is flashing)

- Is the MTC "Sync Source" set to "MTC?"  
When not synchronizing playback with MTC and using the AR-200S as a slave, set "Sync Source" on the AR-3000 to "Internal."

### Pattern phrases and song phrases are not played back as intended

- Phrases composed from pattern phrases or song phrases will not be played back properly unless they are saved as actual phrases (if the composed phrase is not saved, the next phrase is sought and then played back). Check the AR-3000 to confirm whether or not the composite phrase has been saved.

### The start of phrase playback is delayed when playback is controlled from an external device

- Has the "Delay Time" been set for the phrase?  
Check the AR-3000 to confirm whether or not the delay time has been set. Check the control signals being sent from the external control device, connections and so on once more.

## Others

### No sound

- Reconfirm that the power to the AR-200S or connected device is on.
- Reconfirm that the volume control on the AR-200S or connected device is turned up.
- Reconfirm that there are no shorts in any connector cables.

### Phrase number flashes during playback

- This indicates that a MIDI phrase is playing back.  
Although the AR-200S is not MIDI phrase-compatible, if a specified phrase is a MIDI phrase, the phrase number will flash.

### There is a scraping sound coming from the AR-200S

- In situations such as when control signals are input continuously, the movement of the internal relays may make a scraping sound, but this does not indicate any malfunction. To prevent overuse and failure of the relay, you may also switch to Interval Playback in order to have the relay move only once (p. 13).

### The volume of the device connected to the output connector is low

- Could you be using a connection cable that contains a resistor?  
Use a connection cable that does not contain a resistor.

# Error Messages

If an incorrect operation is attempted or execution is not possible, an error message will appear in the display. Note the message that appears, and take the appropriate action.

| Display | Situation  | Action   |
|---------|--|--|
| Er03    | It is possible that the data in the memory card or the card itself has been damaged. | Delete all phrases. If delete card is not possible, or if the same message appears after the card has been delete card, it may be that the card is malfunctioning. Use a different card. |
| Er05    | No more data can be recorded in the card.  | Either delete unnecessary phrases, or use a different card.  |
| Er06    | Either the phrase data is damaged, or the AR-200S is not able to handle the phrase.  | Check the phrase for which the message was displayed.  |
| Er11    | The memory card is not formatted for use with the AR-200S.                           | Format the card.   |
| Er12    | There is no phrase corresponding to the specified phrase.                            | Select a saved phrase or record a new phrase.  |
| Er13    | Data was not written to or read from the card in time.                               | Change the RDAC-Grade, RDAC-Mode, or other recording conditions to reduce the amount of data.  |
| Er14    | Card protect is set to ON, so data cannot be written to the card.                    | Set card protect to OFF.   |
| Er15    | The AR-200S gets hot.  | Ventilate well to avoid overheating, and keep the unit cool.   |

# Regarding Cards

## Card Audio Recording Time Chart

The following table shows recording times available for cards formatted for the AR-3000.

- \* Recording times listed are for mono recording. Recording times are halved when data is recorded in stereo.
- \* These times are for when 1 phrase is recorded continuously, and are provided for your reference when recording. The recording time will depend on the combination of the grade settings of each phrase recorded in each memory card.

| PM-128-CF<br>(128MB) |          | RDAC-Mode |         |         |         |         |
|----------------------|----------|-----------|---------|---------|---------|---------|
|                      |          | H-LINEAR  | LINEAR  | MODE3   | MODE2*  | MODE1   |
| RDAC-Grade           | S-HIGH   | 15:08     | 22:43   | 1:00:35 | 1:00:35 | 1:30:53 |
|                      | HIGH     | 16:28     | 24:43   | 1:05:55 | 1:05:55 | 1:38:53 |
|                      | STANDARD | 22:43     | 34:05   | 1:30:53 | 1:30:53 | 2:16:20 |
|                      | LONG1    | 32:57     | 49:26   | 2:11:51 | 2:11:51 | 3:17:47 |
|                      | LONG2    | 45:26     | 1:08:10 | 3:01:47 | 3:01:47 | 4:32:41 |
|                      | ANNOUNCE | 1:30:53   | 2:16:20 | 6:03:35 | 6:03:35 | 9:05:22 |

- \* Minimum recording times are listed only for MODE2. Depending on conditions, you may be able to attain recording times longer than listed here.

## Recorded Phrase Data

When a piece of Phrase data recorded by the AR-200S, the settings of data on the card will be as follows.

If you will be using the card on the AR-3000, refer to this list.

| Phrase settings     |  |  |
|---------------------|--|--|
| Playback Volume     |  | 100  |
| Delay Time          |  | 00s00f   |
| Playback Point      |  | Start: 00h00m00s00f0sf<br>End: The real time of the phrase |
| Repeat Playback     |  | OFF  |
| Loop Playback       |  | OFF  |
| Fade                |  | Fade In: OFF<br>Fade Out: OFF                              |
| Control Output      |  | OFF  |
| MIDI Playback Tempo |  | 120  |
| Phrase Name         |  | MESSAGE 1<br>(MESSAGE + Phrase number)                     |

## AR-3000 Settings That Can Be Used

When cards created with an AR-3000 are played back on an AR-200S, the resulting playback could diverge from the original. This is due to a variety of factors, including the fact that data created for settings specific to the AR-3000 cannot be used by the AR-200S. For details, see the tables below.

| Phrase Compatibility |                |        |
|----------------------|----------------|--------|
| RDAC-Grade           | ANNOUNCE       | o      |
|                      | LONG2          | o      |
|                      | LONG1          | o      |
|                      | STANDARD       | o      |
|                      | HIGH           | o      |
|                      | S-HIGH         | o      |
| RDAC-Mode            | MODE1          | o      |
|                      | MODE2          | o      |
|                      | MODE3          | o      |
|                      | LINEAR         | o      |
|                      | H-LINEAR       | o      |
|                      | Recording Type | Stereo |
| Mono                 |                | o      |

| 1. Phrase messages  |  |        |
|---|--|--------|
| 1.1   | Playback Volume                          | o      |
| 1.2   | Delay Time                               | o      |
| 1.3   | Playback Point                           | o      |
| 1.4   | Repeat Playback                          | o      |
| 1.5   | Loop Playback                            | o      |
| 1.6   | Fade                                     | o      |
| 1.7   | Control Output                           | o      |
| 1.8   | MIDI Playback Tempo                      | o (*1) |
| 1.9   | Phrase Name                              | o (*2) |
| 2. Phrase Combination   |  |        |
| 2.1   | Pattern Phrase                           | o (*3) |
| 2.2   | Song Phrase                              | o (*3) |
| 4. Card Edit  |  |        |
| 4.1   | Card Format (Number of Recorded Phrases) | o      |
| 4.5   | Card Protect                             | o      |
| 4.6   | Card Name                                | o (*4) |
| 5. Control Input Settings (*5)  |  |        |
| 5.1   | Control Input Mode                       | o      |
| 5.2   | Direct Playback Method                   | o      |
| 5.3   | Program Playback Method                  | o      |
| 5.4   | Binary Playback Method                   | o (*6) |
| 5.5   | Terminal Rec Method                      | o      |
| 6. MIDI Settings  |  |        |
|   | All MIDI Settings                        | x      |
| 7. RS-232C Setting  |  |        |
| 7.1   | Data Transmission Speed Setting          | o      |
| 8. AR-LINK Setting  |  |        |
| 8.1   | AR-LINK Mode                             | x      |
| 9. System Settings  |  |        |
| 9.1   | Dual Mono Mode                           | o      |
| 9.2   | Line Thru Settings                       | o      |
| 9.3   | EQ                                       | o      |
| 9.4   | Volume Thru                              | x      |
| 9.5   | Busy Out                                 | o      |
| 9.6   | Display Extinguished                     | x      |
| *1: MIDI phrases are played back silently for the duration of the phrase in accordance with the playback tempo. |  |        |
| *2: The phrase name will not be displayed on the AR-200S.   |  |        |
| *3: If a MIDI phrase is set, playback is silent for the duration of that phrase.                                |  |        |
| *4: The card name will not be displayed on the AR-200S.   |  |        |
| *5: Enabled only when the playback mode is set to "Playback by Card Data."                                      |  |        |
| *6: For binary playback, up to 250 phrases can be played back.  |  |        |

# MODE SW Settings

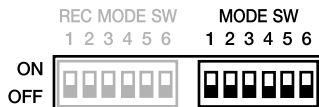
## MODE Switch Specifications

In addition to the REC MODE switches (p. 14), the AR-200S's bottom panel also houses the MODE switches. Various applications are possible by changing the settings of the MODE switches.

Each switch is ON when in the upward position, and OFF when in the downward position.

When the AR-200S is shipped from the factory, all switches will be OFF.

- \* Use a pointed object to change the ON/OFF settings of the MODE switches.
- \* Set the MODE switches with the power to the AR-200S turned off.



## SW 1, 2: Playback Mode Settings

The AR-200S's playback modes (p. 10) are set by means of varying combinations of ON and OFF settings for SW 1 and 2.

| PLAYBACK MODE             | SW 1 | SW 2 |
|---------------------------|------|------|
| Playback by Card Data     | OFF  | OFF  |
| Direct Playback (Last-In) | ON   | OFF  |
| Binary Playback           | OFF  | ON   |
| Interval Playback         | ON   | ON   |

## SW 3: Output Level Setting

Specifies the output level. Set this in accordance with the specifications for the device to which the playback is being output.

- OFF: -10 dBV
- ON: +4 dBu

## SW 4: Programmed

Ordinarily, this should be set to "OFF."

## SW 5: Update Mode

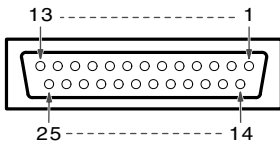
Set this to "ON" when updating the AR-200S with the program files on a CompactFlash card or writing AR-200S programs to CompactFlash cards.

Ordinarily, this should be set to "OFF."

## SW 6: Terminal Rec Setting

When conducting Terminal Rec (p. 14), set this to "ON."

# Control I/O Connector Specifications



| Port No. | Signal Name | Remark           |
|----------|-------------|------------------|
| 1        | 1/INC       | Control Input    |
| 2        | 2           |                  |
| 3        | 3/DEC       |                  |
| 4        | 4           |                  |
| 5        | 5/EXCHANGE  |                  |
| 6        | 6           |                  |
| 7        | 7           |                  |
| 8        | 8           |                  |
| 9        | 9/START     |                  |
| 10       | STOP        |                  |
| 11       | COM (GND)   |                  |
| 12       | COM (GND)   |                  |
| 13       | BUSY OUT    | Control Output   |
| 14       | NC          |                  |
| 15       | CONT OUT    | Control Output   |
| 16       | GND         |                  |
| 17       | BUSY OUT    | Control Output   |
| 18       | CONT OUT    |                  |
| 19       | NC          |                  |
| 20       | NC          |                  |
| 21       | DC OUT      | +5V, Max: 100 mA |
| 22       | GND         |                  |
| 23       | GND         |                  |
| 24       | DC IN       | +9-24V, 1200mA   |
| 25       | DC IN       |                  |

- Control Input and DC Input Terminal (CONTROL A) "1, 2" are connected in parallel with Control I/O Connector (CONTROL B) "1, 2."
- When using Program Playback on a PC card created by the AR-3000, use connectors 1 (INC), 3 (DEC), 5 (EXCHANGE), 9 (START), and 10 (STOP).
- \* Do not make any connection to NC pins, since this will cause faulty operation.

## DC Power Supply

- Power can be supplied to the AR-2005 from an external power supply unit (DC power supply) as well as from the AC adaptor.
- To supply power from an external power supply unit (DC power), use the Control Input and DC Input Terminal (CONTROL A) or the Control I/O Connector (CONTROL B) DC IN and GND pins.

## Power Supply Specifications

DC +9-24 V, 1200 mA

- \* The DC OUT pin of the Control I/O Connector (CONTROL B) can be used as power supply for a sensor, etc.

### NOTE

- Never short a power supply pin (21, 24, 25) to the GND pin, since this will damage the unit.
- When using the DC OUT, be careful not to exceed the maximum rating (100 mA).
- For reasons of safety, do not connect the DC IN + pin of the Control Input and DC Input Terminal (CONTROL A) to metal parts such as the chassis or the Control I/O Connector (CONTROL B).
- Do not supply electrical power simultaneously to multiple connectors or terminals; doing so may result in damage to the unit.

# Specifications

## AR-200S: Audio Recorder

### Recording Format

RDAC (Roland Digital Audio Coding)

### RDAC-Grade (Sampling Rate)

|           |           |
|-----------|-----------|
| S-HIGH:   | 48 kHz    |
| HIGH:     | 44.1 kHz  |
| STANDARD: | 32 kHz    |
| LONG1:    | 22.05 kHz |
| LONG2:    | 16 kHz    |
| ANNOUNCE: | 8 kHz     |

### Playback Rate Area

|           |               |
|-----------|---------------|
| S-HIGH:   | 20 Hz–22 kHz  |
| HIGH:     | 20 Hz–20 kHz  |
| STANDARD: | 20 Hz–15 kHz  |
| LONG1:    | 20 Hz–10 kHz  |
| LONG2:    | 20 Hz–7.5 kHz |
| ANNOUNCE: | 20 Hz–3.7 kHz |

### RDAC-Mode (Signal Processing Method)

|           |  |
|-----------|--|
| H-LINEAR: | 24 bit PCM (playback only)                         |
| LINEAR:   | 16 bit PCM recording                               |
| MODE3:    | 2.5 times extended Recording time than LINEAR      |
| MODE2:    | 2.5 times more extended Recording time than LINEAR |
| MODE1:    | 4 times more extended Recording time than LINEAR   |

### Recording Media

Memory Card (PM-128-CF: option)

\* In order to recording/playback of audio signal, you will need to purchase one of the memory cards.

### CompactFlash Card Slot

1 slot

### Phrase Types

Audio Phrases (stereo/mono)

### Number of Phrases

|                                |                      |
|--------------------------------|----------------------|
| Card made on the AR-200:       | Maximum 250 Phrases  |
| Card made on the AR-200S/3000: | Maximum 1000 Phrases |

### Playback Methods

#### Card made on the AR-200S

|                               |   |
|-------------------------------|---|
| Direct Playback:              | 9 Phrases, 2 Modes (Normal, Last-in)          |
| Interval Playback:            | 9 Phrases                                     |
| Binary Playback:              | 250 Phrases                                   |
| Computer-controlled playback: | 1000 Phrases<br>100 Phrases (Continuous Play) |

#### Card made on the AR-200

|                               |  |
|-------------------------------|--|
| Direct Playback:              | 9 Phrases, 2 Modes (Normal, Last-in)         |
| Interval Playback:            | 9 Phrases                                    |
| Binary Playback:              | 250 Phrases                                  |
| Computer-controlled playback: | 250 Phrases<br>100 Phrases (Continuous Play) |

#### Card made on the AR-3000

|                               |  |
|-------------------------------|--|
| Direct Playback:              | 9 Phrases, 4 Modes<br>(Normal, Fast-in, Last-in, Sequence) |
| Interval Playback:            | 9 Phrases  |
| Program Playback:             | 100 Phrases, 5 Patterns                                    |
| Binary Playback:              | 250 Phrases  |
| Computer-controlled playback: | 1000 Phrases<br>100 Phrases (Continuous Play)              |

### Master Equalizer (Functions only when using cards that have been prepared on the AR-3000.)

High: -12 dB thru +12 dB (3/6 kHz, Shelving Type)  
Low: -12 dB thru +12 dB (200/400 Hz, Shelving Type)

### Residual Noise Level

-80 dBu (Input Short, INPUT VOLUME: middle, DIN-Audio, typ.)

### S/N Ratio

Output: 84 dB (DIN-Audio, typ.)

## RS-232C

Transmission Method: Start-Stop Synchronous System (Asynchronous)  
Duplex Data Transmission

|                  |                           |
|------------------|---------------------------|
| Baud Rate:       | 4800/9600/19200/38400 bps |
| Parity:          | none                      |
| Data Length:     | 8 bit                     |
| Stop bit Length: | 1 bit                     |
| Code:            | ASCII                     |

\* The setting for 38400 bps is for compatibility with legacy models (the AR-2000). However, it is a value for the communication speed that is not defined by the RS-232C standards. Make this setting as necessary when using a legacy model by means of card conversion.

## Display

7 segments, 4 characters (LED)

## Controllers

INPUT VOLUME Knob  
Card Eject Button  
REC MODE Switches (Bottom Chassis)  
MODE Switches (Bottom Chassis)

## Indicators

PLAY/CLIP Indicator  
REC Indicator

## Connectors

LINE I/O Connector (8-pin Euroblock)  
Control/Power In Terminal (5-pin Terminal Block with M3 bolts)  
Control I/O Connector (DB-25 type)  
RS-232C Connector (DB-9 type)

## Power Supply

DC 9 V (AC Adaptor)  
DC 9–24 V (Control/Power In Terminal, Control I/O Connector)

## Current Draw

1000 mA (When Using the AC Adaptor)  
1200 mA (When Using an External Power Supply Unit)

## Dimensions

218 (W) x 233.3 (D) x 44 (H) mm  
8-5/8 (W) x 9-3/16(D) x 1-3/4 (H) inches

## Weight

1.5 kg / 3 lbs 5 oz (Excluding AC Adaptor)

## Accessories

Rubber Feet  
Card Protector (with screws)  
Euroblock Connector  
Owner's Manual  
AC Adaptor (PSB-1U)

## Options

|                     |           |
|---------------------|-----------|
| Memory Card:        | PM-128-CF |
| Rack Mount Adaptor: | RAD-50    |

\* 0 dBu = 0.775 V<sub>rms</sub>

\* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

\* In addition to the owner's manual, the separate publication "RS-232C Reference Notes" is also available for those needing detailed documentation regarding RS-232C connector control. Please download the PDF file (free of charge) from the following URL.

RS-232C Reference Notes cover the following topics:

- Setup
- Overviews, detailed descriptions, and lists of commands
- Examples of usage algorithms

<http://www.rssamerica.com/>



## Input/Output Standard

### Input Standard

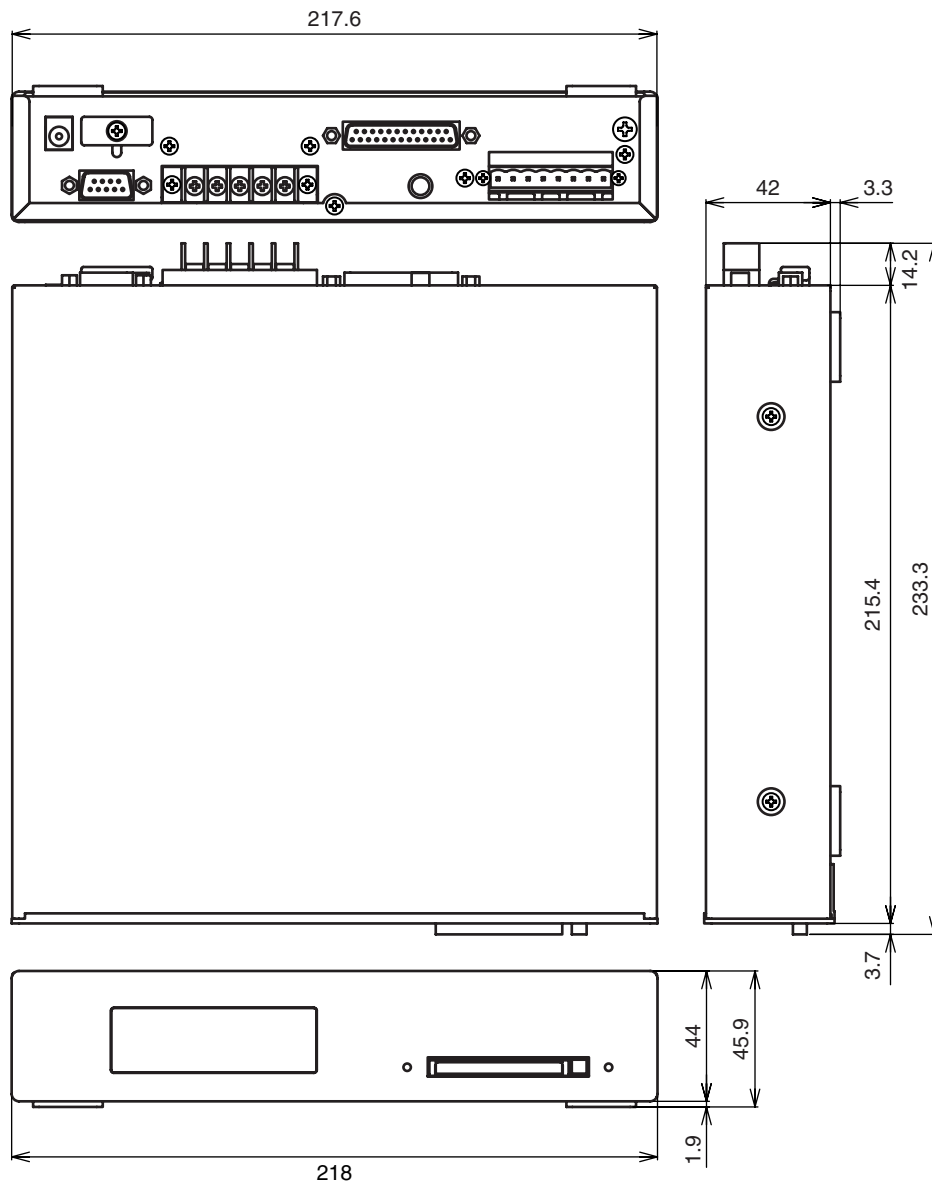
| Input                    | Input Sensitivity | Nominal Input Level | Non-Clip Max Input Level | Input Impedance | Recommended Source Impedance |
|--------------------------|-------------------|---------------------|--------------------------|-----------------|------------------------------|
| Line Inputs (Unbalanced) | -10 dBu           | 0 dBu               | +20 dBu                  | 10 k ohms       | 1 k ohms or less             |

### Output Standard

| Output                  | Nominal Output level | Non-Clip Max Output Level | Output Impedance | Recommended Load Impedance |
|-------------------------|----------------------|---------------------------|------------------|----------------------------|
| Line Outputs (Balanced) | +4 dBu/-10 dBV       | +18 dBu                   | 600 ohms         | 600 ohms or greater        |

\* 0 dBu = 0.775 Vrms, -10 dBV = -7.79 dBu

## Dimensions



\* Dimensions are with card inserted and rubber feet (included) attached.

\* The power cord is not included.

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For the U.K.

**IMPORTANT:** THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

BLUE: NEUTRAL  
BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.  
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.  
Under no circumstances must either of the above wires be connected to the earth terminal of a three pin plug.

For the USA

## DECLARATION OF CONFORMITY Compliance Information Statement

Model Name : AR-200S  
Type of Equipment : Audio Recorder  
Responsible Party : Roland Systems Group U.S.  
Address : 14830 Desman Road, La Mirada, CA 90638  
Telephone : (714) 521-8000

For EU Countries



This product complies with the requirements of European Directive 89/336/EEC.

For the USA

## FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.  
This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

### NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

### AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

# Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

## ASIA

### TAIWAN

ROLAND TAIWAN  
ENTERPRISE CO., LTD.  
Room 5, 9fl. No. 112 Chung Shan  
N.Road Sec.2, Taipei, TAIWAN,  
R.O.C.  
TEL: (02) 2561 3339

### SINGAPORE/ MALAYSIA

Roland Asia Pacific Sdn. Bhd.  
45-1, Block C2, Jalan PJU 1/39,  
Dataran Prima, 47301 Petaling  
Jaya, Selangor, MALAYSIA  
TEL: 3-7805-3263

## CENTRAL/LATIN AMERICA

Roland Systems Group U.S.  
14830 Desman Road, La Mirada,  
CA 90638 U.S.A.  
TEL: 714-521-8000

## EUROPE

### EAST EUROPE

Roland East Europe Ltd.  
Warehouse Area 'DEPO' Pf.83  
H-2046 Torokbalint, HUNGARY  
TEL: (23) 511011

### AUSTRIA/BELGIUM/ FRANCE/GERMANY/ HOLLAND/ LUXEMBOURG/ PORTUGAL/SPAIN/ SWITZERLAND

Roland Iberia, S.L.  
Paseo García Faria, 33-35  
08005 Barcelona SPAIN  
TEL: 93 493 91 00

### DENMARK

Roland Scandinavia A/S  
Nordhavnsvej 7, Postbox 880,  
DK-2100 Copenhagen  
DENMARK  
TEL: 3916 6200

### FINLAND

Roland Scandinavia As,  
Filial Finland  
Elannontie 5  
FIN-01510 Vantaa, FINLAND  
TEL: (0)9 68 24 020

### NORWAY

Roland Scandinavia Avd.  
Kontor Norge  
Lilleakerveien 2 Postboks 95  
Lilleaker N-0216 Oslo  
NORWAY  
TEL: 2273 0074

### SWEDEN

Roland Scandinavia A/S  
SWEDISH SALES OFFICE  
Danvik Center 28, 2 tr.  
S-131 30 Nacka SWEDEN  
TEL: (0)8 702 00 20

## UNITED KINGDOM/ IRELAND

Roland (U.K.) Ltd.  
Atlantic Close, Swansea  
Enterprise Park, Swansea  
SA7 9FJ,  
UNITED KINGDOM  
TEL: (01792) 702701

## OCEANIA

Roland Corporation  
Australia Pty., Ltd.  
38 Campbell Avenue  
Dee Why West, NSW 2099  
AUSTRALIA

For Australia  
TEL: (02) 9982 8266  
For New Zealand  
TEL: (09) 3098 715

## NORTH AMERICA

### CANADA

Roland Canada Music Ltd.  
(Head Office)  
5480 Parkwood Way, Richmond  
B. C., V6V 2M4 CANADA  
TEL: (604) 270 6626

Roland Canada Music Ltd.  
(Toronto Office)

170 Admiral Boulevard  
Mississauga ON L5T 2N6  
CANADA  
TEL: (905) 362 9707

### U. S. A.

Roland Systems Group U.S.  
14830 Desman Road, La Mirada,  
CA 90638 U.S.A.  
TEL: 714-521-8000

As of December 10, 2005 (RSS)



This product must be disposed of separately  
at your local waste recycling centre.  
Do not dispose of in household waste bin.



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